OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need: Reliability in Forensic Document Examination

Keyword(s): Accuracy, Reliability, Error Rates, Admissibility

Submitting subcommittee(s): Forensic Document Examination **Date Approved:**

(If SAC review identifies additional subcommittees, add them to the box above.)

Background Information:

1. Description of research need:

Research testing the Accuracy and Reliability of Document Examiners. Most importantly the examination of handwriting, hand printing, signatures, and initials.

2. Key bibliographic references relating to this research need:

Validity, Reliability, Accuracy, and Bias in Forensic Signature Identification Mara L. Merlino and Tierra M. Freeman, Veronica Blas Dahir and Victoria Springer, Derek Hammond, Adrian Dyer, Bryan Found. Kentucky State University, Frankfort, Kentucky. NIJ Grant No. 2010-DN-BX-K271.

Raymond Marquis, Silvia Bozza, Matthieu Schmittbuhl and Franco Taroni Handwriting Evidence Evaluation Based on the Shape of Characters: Application of Multivariate Likelihood Ratios. *J Forensic Sci*. Volume 56, Issue S1, January 2011, Pages: S238–S242.

Moshe Kam, Pramod Abichandani, and Tom Hewett. (2015). Simulation Detection in Handwritten Documents by Forensic Document Examiners. *J Forensic Sci*, July 2015, Vol. 60, No. 4'

M. Kam, J. Wetstein, and R. Conn. "Proficiency of Professional Document Examiners in Writer Identification," *Journal of Forensic Science*, 39(1):5-14, 1994.

M. Kam, G. Fielding, and R. Conn. "Writer Identification by Professional Document Examiners," *Journal of Forensic Science*, 42(5): 778-786, 1997.

M. Kam, G. Fielding, and R. Conn. "Effects of Monetary Incentives on Performance of Nonprofessionals in Document-examination Proficiency Tests," *Journal of Forensic Science*, 43(5):1000-1005, 1998.

M. Kam, K. Gummadidala, G. Fielding, and R. Conn. "Signature Authentication by Forensic Document Examiners." *Journal of Forensic Science*, 46(4):884-888, 2001.

Jodi Sita, Bryan Found, and Douglas K. Rogers. (2002). Forensic Handwriting Examiners' Expertise for Signature Comparison. *J Forensic Sci,* Sept. 2002, Vol. 47, No. 5

Gantz, D. Saunders, C. P. (2015), Quantifying the Effects of Database Size and Sample Quality on Measures

of Individualization Validity and Accuracy in Forensics, National Institute of Justice Grant Report, Award 2009-DN-BX-K234

Saunders, C.P., Davis, L.J., Buscaglia, J., Using Automated Comparisons to Quantify Handwriting Individuality. J Forensic Sci. 2011. May; 56-3.

Hepler AB, Saunders CP, Davis LJ, Buscaglia J. Score-based likelihood ratios for handwriting evidence. Forensic Sci Int. 2012 Jun 10; 219(1-3):129-40

Found, B., Sita, J. and Rogers, D., "The development of a program for characterizing forensic handwriting examiners' expertise: Signature examination pilot study", Journal of Forensic Document Examination, Vol. 12, 1999

Dyer, A., Found, B., and Rogers, D., "Visual Attention and Expertise for Forensic Signature Analysis", Journal of Forensic Sciences, Vol. 51, No. 6, 2006

Found, B. and Rogers, D., "The initial profiling trial of a program to characterize forensic handwriting examiners' skill", Journal of the American Society of Questioned Document Examiners, Vol. 6, No. 2, 2003

Dyer, A., Found, B., and Rogers, D., "An insight into forensic document examiner expertise for discriminating between forged and disguised signatures", Journal of Forensic Sciences, Vol. 53, No. 5, 2008

Black, D., Found, B. and Rogers, D., "The frequency of the occurrence of handwriting performance features used to predict whether questioned signatures are simulated", Journal of Forensic Document Examination, Vol. 15, 2003

Wendt, G., "Statistical observations of Disguised signatures", Journal of the American Society of Questioned Document Examiners, Vol.3, No. 1, 2000

Herkt, A., Signature Disguise or signature forgery", Forensic Science Society, Vol. 26, 1986

Found, B., and Rogers, D., "Investigating forensic document examiners' skill relating to opinions on photocopied signatures", Forensic Science Society, Vol. 45, No. 4, 2005

Dawson, G. and Lindblom, B., "An evaluation of line quality in photocopied signatures", Science & Justice, Vol. 38, No. 3, 1998

Found, B., and Rogers, D., "The probative character of forensic handwriting examiners' identification and elimination opinions on questioned signatures", Forensic Science International, Vol. 178, 2008

Dewhurst, T., Found, B., and Rogers, D., "Are expert penmen better than lay people at producing simulations of a model signature?", Forensic Science International, Vol. 180, 2008

Found, B., Rogers, D., and Herkt, A., "Comparison of document examiners' opinions on original and photocopied signatures", Journal of Forensic Document Examination, Vol. 14, 2001

Dewhurst, T., Found, B., Ballantyne, K, and Rogers, D., "The effects of extrinsic motivation of expertise characterization in forensic signature blind trials", Forensic Science International circa 2013

Parrett, D., "The reliability of examinations involving multiple writers", Journal of the American Society of Questioned Document Examiners, Vol.12, No. 2, 2009

Durina, M., "The determination of authorship from a homogenous group of writers", Journal of the American Society of Questioned Document Examiners, Vol. 12, No. 2, 2009

Hammond, D., "Forensic document examiners' expertise in the examination of text-based signatures', presented at the 2009 Annual Meeting of the American Academy of Forensic Sciences in Denver, CO.

Hammond, D., "Forensic document examiners' expertise in the examination of mixed style signatures', presented at the 2010 Annual Meeting of the Southeastern Association of Forensic Document Examiners in Atlanta, GA.

Hammond, D., "Forensic document examiners' expertise in the examination of stylized signatures', presented at the 2011 Annual Meeting of the American Society of Questioned Document Examiners in Philadelphia, PA.

Bird, C., Found, B., Ballantyne, K., and Rogers, D., "Forensic handwriting examiners' opinions on the process of production of disguised and simulated signatures", Forensic Science International, Vol. 195, 2010

3a. In what ways would the research results improve current laboratory capabilities?

Testing of this sort can help those document examiners who may be weak in specific areas strengthen their abilities. When an examiners abilities are tested and proven it makes for a more competent examiner. This increased competence in examiners will strengthen the field as a whole.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

Results from empirical studies will need to be reflected in the standards created for the applicable forensic field. They should strengthen the foundations of the field and show areas in which examiners are reliable and areas where more research and training needs to be conducted.

3c. In what ways would the research results improve services to the criminal justice system?

Any research that can further validate forensic examinations will be a positive to the criminal justice system. The judges, in their gatekeeping role, would have a more informed view of the strengths and weaknesses of Forensic Document Examination methods, techniques, and training.

4. Status assessment (I, II, III, or IV): I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.

Approvals:

Subcommittee Approval date:

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SAC

1. Does the SAC agree with the research need? Yes [x] No [ ]
2. Does the SAC agree with the status assessment? Yes [x] No [ ]

If no, what is the status assessment of the SAC:

Approval date: 17-Mar-2016

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)